



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/030,198	08/19/2002	Gurudas Samant	METAL 1287-WCG	9196

27386 7590 11/07/2005

NORRIS, MCLAUGHLIN & MARCUS, P.A.
875 THIRD AVE
18TH FLOOR
NEW YORK, NY 10022

EXAMINER

COOKE, COLLEEN P

ART UNIT	PAPER NUMBER
----------	--------------

1754

DATE MAILED: 11/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/030,198

Applicant(s)

SAMANT ET AL.

Examiner

Colleen P. Cooke

Art Unit

1754

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 13-15 and 17-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9, 11, 12 and 16 is/are rejected.
- 7) ☒ Claim(s) 10 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Election/Restrictions

Applicant's election with traverse of Group I, claims 1-12 in the reply filed on 7/8/04 was acknowledged. Newly added claim 16, dependent from claim 2 is also treated; claims 13-15 remain non-elected and newly added claims 17-19, ultimately dependent from claim 13, are likewise non-elected. The requirement was deemed proper and was made FINAL in the office action mailed 8/25/04. Claims 1-12 and 16 are therefore the remaining elected claims pending and treated below.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-9, 11, 12, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue et al. (4221768) in view of Graf et al. (4810478) and Frey et al. (6117405).

With respect to claims 1, 5, 11, and 12, Inoue et al. teaches a catalyst for purifying exhaust and waste gases from boilers using heavy oils or coal or from combustion engines, which contain both sulfur and nitrogen oxides (Column 1, lines 7-24) in the temperature range from 150°C to 500°C (Column 5, line 47) using a reducing agents such as ammonia (Column 5, lines 23-48). Inoue et al. teaches that the catalyst can have any desired shape, including a honeycomb (Column 5, lines 19-22) and in one example teaches that the catalyst measures 160

Art Unit: 1754

mm in lateral side, 160 mm in vertical side and 450 mm in length with an intercell distance of 5 mm (Column 13, lines 9-12). This structure would inherently have at least 50% free opening surface. However, Inoue et al. does not teach adjusting the gas flow in the free reaction space corresponding to the Froude numbers as claimed; nor does Inoue et al. teaches adding a free oxide, carbonate, or hydroxide of calcium, magnesium, sodium, or potassium to the exhaust gas prior to contacting the exhaust gas with a catalyst.

With respect to claims 1, 3, and 4, Graf et al. teaches a process for removing sulfur oxides and other gaseous pollutants from flue gases by means of a reactant such as sodium, potassium, calcium and/or magnesium as an oxide, hydroxide, or carbonate (see abstract) which range from 1 to 300 μm (see claim 1), wherein the gas flow in the reactor is controlled according to the Froude number (Column 3, line 50 through Column 4, line 18), which it is noted discloses the same equation as that which is claimed, though different notation may be used (see also claim 4 of Graf et al.). Graf et al. teaches that the most preferred particle material is calcium hydroxide (Column 3, lines 1-5). It would have been obvious to modify the process of treating a gas with a catalyst as taught by Inoue et al. by including particles of sodium, potassium, calcium and/or magnesium as an oxide, hydroxide, or carbonate because Graf et al. teaches that these particles serve as useful reactants in this process. It also would have been obvious to modify the process of treating a gas with a catalyst as taught by Inoue et al. by controlling the reactor gas flow as taught by Graf et al. because both references are drawn to the treatment of similar exhaust gases and Graf et al. teaches that the process can be adapted easily to use with any plant (Column 5, line 65 through Column 6, line 24) and that the velocity, controlled according to the equation, should also be selected in dependence on the particles (Column 4, lines 22-25).

Art Unit: 1754

With respect to claim 1, Frey et al. teaches (see abstract and Figure 1) a process for removing nitrogen oxides from exhaust gases using ammonia and a catalyst (7) which also includes the addition of a dry absorbent (17) to the gas stream prior to contact with the catalyst. Frey et al. further teaches that the dry absorbent can be an alkali or alkaline earth metal compound (Column 5, lines 35-39) and specifically mentions CaO and NaHCO₃ (Column 5, lines 49-50). It would have been obvious to modify the process of treating a gas with a catalyst as taught by Inoue et al. in view of Graf et al. by introducing the dry absorbent prior to contact with the catalyst because Frey et al. teaches that this method and that it provides a way to clean the waste gas comprehensively in a very cost-efficient manner (Column 5, lines 53-54; Column 3, lines 25-29).

With respect to claim 2 and 16, Inoue et al. teaches (see abstract); also Column 4, lines 27-45) that the catalyst may have titanium dioxide (C), and 1-70% catalytic oxide of at least one element selected from a group including V and W (B).

With respect to claims 6 and 7, Frey et al. teaches that the reducing agent may be ammonia or ammonia-containing substances which may be in aqueous form (Column 3, lines 20-24) and wherein the reducing agent is added (13a, 13b, 13c, 14) to the gas stream prior to entry into the reactor (7) at a temperature of 700-900°C (Column 4, lines 8-11, 25-27 and Figure 1). It would have been obvious to modify the process of treating a gas with a catalyst as taught by Inoue et al. by introducing aqueous ammonia-containing reducing agent into the gas stream prior to entry into the reactor because Frey et al. teaches that adding the reducing agent at such a point is still effective to reduce NO_x and therefore accomplishes the goal of Inoue et al.

Art Unit: 1754

With respect to claim 8, Frey et al. teaches (see Column 5, lines 22-23 and Figure 1) that ammonia may be injected after the meter (5) which is after the addition of a dry absorbent (17) to the gas stream. It would have been obvious to modify the process of treating a gas with a catalyst as taught by Inoue et al. by introducing the ammonia-containing reducing agent into the gas stream after the dry absorbent because Frey et al. teaches that adding the reducing agent at such a point relative to the absorbent is still effective to reduce NOx and therefore accomplishes the goal of Inoue et al.

With respect to claim 9, Graf teaches that the flue gas can be supplied to the reactor from the bottom (Column 6, lines 40-41 and the figure). It would have been obvious to modify the process of treating a gas with a catalyst as taught by Inoue et al., which is silent as to from where the exhaust gas enters the reactor, by having the exhaust gas enter the reactor from the bottom because Graf teaches that this is an arrangement known in the art, accommodated by the equipment available in the art, and is capable of producing the results desired by Inoue et al. with respect to removing pollutants from the gas.

Allowable Subject Matter

Claim 10 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:
The prior art of record does not teach or suggest the limitations of claim 10.

Art Unit: 1754

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Colleen P Cooke whose telephone number is 571-272-1170. She can normally be reached Mon.-Thurs. 8am-6:30pm.

If attempts to reach the examiner by telephone are unsuccessful, her supervisor, Stan Silverman can be reached at 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Colleen P Cooke
Primary Examiner
Art Unit 1754